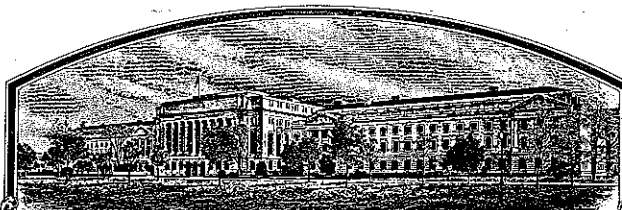


No.

9700398



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

*Western Plant Breeders*

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'WestBred 470'

*In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirtieth day of September, in the year of our Lord one thousand nine hundred and ninety-nine.*

Attest:

*Robert W. Schlegel*

Acting Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*John H. ...*

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)  Western Plant Breeders, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER		3. VARIETY NAME  WestBred 470	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)  8111 Timberline Drive Bozeman, MT 59718		5. TELEPHONE (include area code)  (406) 587-1218		<b>FOR OFFICIAL USE ONLY</b> PVPO NUMBER 9700398	
		6. FAX (include area code)  (406) 586-8247			
7. GENUS AND SPECIES NAME  Triticum aestivum		8. FAMILY NAME (Botanical)  Poaceae		FILING AND EXAMINATION FEE: \$ 2,450 DATE Sept. 10, 1997	
9. CROP KIND NAME (Common name)  Common wheat				CERTIFICATION FEE: \$ 300- DATE August 31, 1999	
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)  Corporation		11. IF INCORPORATED, GIVE STATE OF INCORPORATION  Arizona		12. DATE OF INCORPORATION  August 24, 1990	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS  Dr. Dale Clark Western Plant Breeders, Inc. 8111 Timberline Drive Bozeman, MT 59718				14. TELEPHONE (include area code)  (406) 587-1218	
				15. FAX (include area code)  (406) 586-8247	
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)					
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)					
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes," answer items 18 and 19 below) <input checked="" type="checkbox"/> NO (If "no," go to item 20)					
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO			19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED		
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES (If "yes," give names of countries and dates) <input type="checkbox"/> NO U.S.A. September 1997					
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.					
The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.					
Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF APPLICANT (Owner(s))  Dale R. Clark for Western Plant Breeders NAME (Please print or type) Dale R. Clark			SIGNATURE OF APPLICANT (Owner(s))  DR Biggerstaff NAME (Please print or type) Dan R. Biggerstaff		
CAPACITY OR TITLE  Wheat and Barley Breeder		DATE  Sept. 11, 1997		CAPACITY OR TITLE  General Manager	
				DATE  9-11-97	

## WestBred 470

### 16.a. Exhibit A. Origin and Breeding History

WestBred 470 is a soft white winter wheat originating from a 1986 intercross of winter F2 plants in a population that was the result of crossing WPB's malesterile soft white spring population by the Pacific Northwest varieties Daws, Hyslop, Hill-81, Lewjain, Luke, McDermid, Nugaines, and Stephens, and the Northeastern varieties Frankenmuth, Tecumseh and Ticonderoga.

WPB's male sterile soft white spring population was developed by crossing the varieties Fielder, Fieldwin, and Twin onto male sterile plants in Western Plant Breeder's basic Male Sterile Facilitated Recurrent Selection Population (MSFRSP). This basic MSFRSP was originally obtained from Mr. Rex Thompson of the University of Arizona at the Mesa Experiment Station. Mr. Thompson constructed this spring MSFRSP (Wheat Germplasm CC A-1977) utilizing two male sterile lines from the variety 'Siete Cerros 66' and many public varieties and Breeding lines as males.

The F1 was grown near Phoenix, AZ in 1987. The F2 was planted near Bozeman, MT in the fall of 1987, heads were selected in Aug., '88 from semidwarf surviving plants and bulked to form an F3 population. The F3 was planted in the fall of 1988 near Bozeman. Individual F3 heads were selected from semidwarf, surviving plants and planted as single rows in the fall of 1989. Agronomically acceptable rows were selected in August, 1990, and one such row was given the selection number BZ 9W90-470. The F5 through F10 generation was tested for yield and quality in trials in Idaho, Washington, and Montana from 1991 through 1996. Heads were selected from the F6 bulk in August 1992 and planted as head rows in the fall. Uniform F7 rows were harvested individually in August, 1993 and planted as row-plots in the fall of 1993. Uniform plots were harvested individually in August, 1994 and planted as individual strips in the fall of 1994. Uniform strips were harvested in August 1995 and bulked to produce Breeders seed. This Breeders seed was planted on approximately 19 acres near Moses Lake, WA in the fall of 1995 to produce Foundation seed. Foundation seed was harvested in August 1996 and designated "WestBred 470". This Foundation seed was provided to Associate members in the fall of 1996 to produce Registered and Certified seed. Registered and Certified seed was harvested in August, 1997. Certified seed is available to growers for the first time in the fall of 1997.

2

## WestBred 470

A variant that is similar to WestBred 470 but is 4 to 8 inches taller occurs at a frequency of up to .12 % (12 per 10,000 plants). Also, a red seed variant may occur at a frequency of up to .06% (6 seeds per 10,000 seeds). Otherwise, WestBred 470 is a stable and uniform variety in agronomic appearance and performance across several generations (F6 through F10) and growing conditions. Agronomic data to support this stability are presented in tables 1 through 9.

### **16.b. Exhibit B. Statement of Distinctness**

WestBred 470 is most similar to the variety Stephens. **However, WestBred 470 has anthocyanin in it's auricles where Stephens' auricles are white.** Also, WestBred 470 is three days earlier in heading,  $t = 8.47$  with 17 d.f.,  $p < .001$  (see Table 10), and has a testweight of about three pounds heavier,  $t = 10.6$  with 18 d.f.,  $p < .001$  (see Table 11).

### **16.c. Exhibit C. Objective Description** (see pages 5 and 6)

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
LIVESTOCK AND SEED DIVISION  
BELTSVILLE, MARYLAND 20705

EXHIBIT C  
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY  
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

Western Plant Breeders, Inc.

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

8111 Timberline Drive  
Bozeman, MT 59718

FOR OFFICIAL USE ONLY

PVPO NUMBER

9700398

VARIETY NAME OR TEMPORARY DESIGNATION

WestBred 470

Place the appropriate number that describes the varietal character of this variety in the boxes below.  
Place a zero in first box (e.g.,  or ) when number is either 99 or less or 9 or less.

## 1. KIND:

1 = COMMON    2 = DURUM    3 = EMMER    4 = SPELT    5 = POLISH    6 = POULARD    7 = CLUB

## 2. TYPE:

1 = SPRING    2 = WINTER    3 = OTHER (Specify) \_\_\_\_\_  1 = SOFT    3 = OTHER (Specify) \_\_\_\_\_  
2 = HARD

1 = WHITE    2 = RED    3 = OTHER (Specify) \_\_\_\_\_

## 3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

FIRST FLOWERING     LAST FLOWERING

## 4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN .....  1 = ARTHUR    2 = SCOUT    3 = CHRIS    7. Stephens  
 NO. OF DAYS LATER THAN .....  4 = LEMHI    5 = NUGAINES    6 = LEEDS    8. Yuma

## 5. PLANT HEIGHT (From soil level to top of head):

CM. HIGH  
 CM. TALLER THAN .....  1 = ARTHUR    2 = SCOUT    3 = CHRIS    7. Stephens  
 CM. SHORTER THAN .....  4 = LEMHI    5 = NUGAINES    6 = LEEDS    8. Eltan

## 6. PLANT COLOR AT BOOTING (See reverse):

1 = YELLOW GREEN    2 = GREEN    3 = BLUE GREEN

## 7. ANTHUR COLOR:

1 = YELLOW    2 = PURPLE

## 8. STEM:

Anthocyanin: 1 = ABSENT    2 = PRESENT     Waxy bloom: 1 = ABSENT    2 = PRESENT  
 Hairiness of last internode of rachis: 1 = ABSENT    2 = PRESENT     Internodes: 1 = HOLLOW    2 = SOLID  
 NO. OF NODES (Originating from node above ground)     CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

## 9. AURICLES:

Anthocyanin: 1 = ABSENT    2 = PRESENT     Hairiness: 1 = ABSENT    2 = PRESENT

## 10. LEAF:

Flag leaf at booting stage: 1 = ERECT    2 = RECURVED     Flag leaf: 1 = NOT TWISTED    2 = TWISTED  
3 = OTHER (Specify) \_\_\_\_\_  
 Hairs of first leaf sheath: 1 = ABSENT    2 = PRESENT     Waxy bloom of flag leaf sheath: 1 = ABSENT    2 = PRESENT  
 MM. LEAF WIDTH (First leaf below flag leaf)     CM. LEAF LENGTH (First leaf below flag leaf):

## 11. HEAD:

 Density. 1 = LAX 2 = DENSE Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE  
4 = OTHER (Specify) \_\_\_\_\_ Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED  
5 = BROWN 6 = BLACK 7 = OTHER (Specify): \_\_\_\_\_

9700398

  CM. LENGTH  MM. WIDTH

## 12. GLUMES AT MATURITY:

 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)  
3 = LONG (CA. 9 mm.) Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)  
3 = WIDE (CA. 4 mm.) Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED  
4 = SQUARE 5 = ELEVATED 6 = APICULATE Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

## 13. COLEOPTILE COLOR:

 1 = WHITE 2 = RED 3 = PURPLE

## 14. SEEDLING ANTHOCYANIN:

 1 = ABSENT 2 = PRESENT

## 15. JUVENILE PLANT GROWTH HABIT:

 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

## 16. SEED:

 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL Check: 1 = ROUNDED 2 = ANGULAR Brush: 1 = SHORT 2 = MEDIUM 3 = LONG Brush: 1 = NOT COLLARED 2 = COLLARED Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN  
4 = BROWN 5 = BLACK Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) \_\_\_\_\_  MM. LENGTH  MM. WIDTH  GM. PER 1000 SEEDS

## 17. SEED CREASE:

 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'  
2 = 80% OR LESS OF KERNEL 'CHRIS'  
3 = NEARLY AS WIDE AS KERNEL 'LEMHI' Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'  
2 = 35% OR LESS OF KERNEL 'CHRIS'  
3 = 50% OR LESS OF KERNEL 'LEMHI'

## 18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

 STEM RUST  
(Races) LEAF RUST  
(Races) STRIPE RUST  
(Races) LOOSE SMUT POWDERY MILDEW BUNT OTHER (Specify) \_\_\_\_\_

## 19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

 SAWFLY APHID (Bydv.) GREEN BUG CEREAL LEAF BEETLE OTHER (Specify) \_\_\_\_\_HESSIAN FLY  
RACES: GP A B C D E F G

## 20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Stephens	Seed size	Cashup
Leaf size	Stephens	Seed shape	Cashup
Leaf color	Daws	Coleoptile elongation	Stephens
Leaf carriage	Stephens	Seedling pigmentation	Stephens

## INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggles and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

**Table 1** Yield in pounds per acre of WestBred 470 compared to check varieties in Western Plant Breeders trials.

<b>92</b>	<b><u>WestBred 470</u></b>	<b><u>Stephens</u></b>	<b><u>Madsen</u></b>	<b><u>Cashup</u></b>
Bozeman, MT	7905	8692	8355	
Burley, ID	5759	5377	5595	
Moses Lake, WA	8775	7594	7394	
<b>93</b>				
Bozeman, MT	8434	9347	8488	9238
Blackfoot, ID	8230	8666	7757	8307
Burley, ID	7987	8563	8090	8730
Moses Lake, WA	6789	6336	7524	6562
Steptoe, WA	8435	7999	7814	8144
<b>94</b>				
Blackfoot, ID	9012	7902	9145	9658
Burley, ID	5359	4318	5444	5222
Moses Lake, WA	10291	7151	9148	9301
<b>95</b>				
Blackfoot, ID	7156	7264	7404	7784
Burley, ID	7666	7679	8102	8051
Moses Lake, WA	7193	7424	7168	7322
Steptoe, WA	5402	5108	5427	5645
<b>96</b>				
Blackfoot, ID	9396	9121	8628	8773
Moses Lake, WA	8934	7680	7667	7142
Walla Walla, WA	<u>8077</u>	<u>7411</u>	<u>7078</u>	<u>7130</u>
mean(18)	7822	7424	7568	7801

**Table 2** Test weight in pounds per bushel of WestBred 470 compared to check varieties in Western Plant Breeders trials.

<b>92</b>	<b><u>WestBred 470</u></b>	<b><u>Stephens</u></b>	<b><u>Madsen</u></b>	<b><u>Cashup</u></b>
Bozeman, MT	61	59	60	
Burley, ID	62	59	59	
Moses Lake, WA	58	55	55	
<b>93</b>				
Bozeman, MT	61	60	58	61
Blackfoot, ID	63	59	60	62
Burley, ID	63	60	61	61
Moses Lake, WA	63	57	60	59
Steptoe, WA	63	61	62	63
<b>94</b>				
Blackfoot, ID	61	56	58	59
Burley, ID	63	59	62	60
Moses Lake, WA	65	60	60	61
Steptoe, WA	60	58	58	60
<b>95</b>				
Blackfoot, ID	61	56	58	61
Burley, ID	63	60	60	60
Moses Lake, WA	61	59	59	61
Steptoe, WA	61	59	59	61
<b>96</b>				
Blackfoot, ID	63	60	60	62
Moses Lake, WA	63	60	59	61
Walla Walla, WA	<u>63</u>	<u>60</u>	<u>60</u>	<u>61</u>
mean(19)	62	59	59	61

**Table 3** Plant height in inches of WestBred 470 compared to check varieties in Western Plant Breeders trials.

<b>92</b>	<b><u>WestBred 470</u></b>	<b><u>Stephens</u></b>	<b><u>Madsen</u></b>	<b><u>Cashup</u></b>
Bozeman, MT	36	37	37	
Burley, ID	33	32	31	
Moses Lake, WA	40	40	42	
<b>93</b>				
Bozeman, MT	36	38	39	39
Blackfoot, ID	34	33	37	36
Burley, ID	34	34	35	35
Moses Lake, WA	32	32	35	31
Steptoe, WA	41	41	42	40
<b>94</b>				
Blackfoot, ID	35	37	40	37
Burley, ID	33	34	33	32
Moses Lake, WA	36	34	39	37
Steptoe, WA	40	39	42	41
<b>95</b>				
Blackfoot, ID	34	37	37	38
Burley, ID	36	35	39	38
Moses Lake, WA	36	33	35	34
Steptoe, WA	35	36	37	34
<b>96</b>				
Blackfoot, ID	35	35	36	36
Moses Lake, WA	38	38	38	36
Walla Walla, WA	<u>38</u>	<u>38</u>	<u>37</u>	<u>36</u>
mean(19)	36	36	37	36

**Table 4** Protein concentration (%) of WestBred 470 compared to check varieties in Western Plant Breeders trials.

<b>92</b>	<b><u>WestBred 470</u></b>	<b><u>Stephens</u></b>	<b><u>Madsen</u></b>	<b><u>Cashup</u></b>
Bozeman, MT	12.0	12.0	12.4	
Burley, ID	11.4	8.4	9.0	
Moses Lake, WA	13.1	14.0	13.3	
<b>93</b>				
Bozeman, MT	11.0	10.8	10.7	10.8
Blackfoot, ID	9.6	9.3	10.2	9.7
Burley, ID	9.5	10.1	8.3	9.5
Moses Lake, WA	10.1	9.5	9.6	10.2
Steptoe, WA	9.5	8.6	10.0	9.1
<b>94</b>				
Blackfoot, ID	10.3	11.0	11.1	10.8
Burley, ID	8.4	8.6	8.1	7.3
Moses Lake, WA	10.9	11.3	10.6	10.5
Steptoe, WA	12.0	11.3	11.3	11.1
<b>95</b>				
Blackfoot, ID	11.4	11.9	11.4	9.9
Burley, ID	11.7	10.4	10.3	9.7
Moses Lake, WA	14.8	13.6	14.7	12.5
Steptoe, WA	11.7	9.9	11.8	10.2
<b>96</b>				
Blackfoot, ID	10.2	9.4	9.8	9.2
Moses Lake, WA	11.8	9.3	10.6	9.0
Walla Walla, WA	<u>10.6</u>	<u>10.3</u>	<u>10.7</u>	<u>9.4</u>
mean	11.1	10.5	10.7	9.9

**Table 5** Heading dates of WestBred 470 compared to check varieties in Western Plant Breeders, Montana State Univ. and Univ. of Idaho trials.

	<u>WestBred 470</u>	<u>Stephens</u>	<u>Madsen</u>	<u>Cashup</u>
<b>92</b>				
Bozeman, MT	163	167	172	
<b>93</b>				
Bozeman, MT	173	177	183	172
<b>95</b>				
Bozeman, MT	181	187	190	182
MSU-				
Bozeman, MT	173	173	178	
Kalispell, MT	154	157	162	
Moccasin, MT	174	177	180	
Huntley, MT	162	164	166	
U of I				
Kimberly, ID	155	157	161	
Aberdeen, ID	170	171	172	
Paul, ID	165	168	172	
<b>96</b>				
Bozeman, MT	178	181	184	182
MSU-				
Bozeman, MT	170	174	179	178
Kalispell, MT	166	168	171	169
U of I				
Kimberly, ID	153	156		
Rupert, ID	162	164		
Aberdeen, ID	158	159		
Idaho Falls, ID	173	176		
<b>97</b>				
Bozeman, MT	<u>166</u>	<u>169</u>	<u>171</u>	<u>169</u>
mean (18)	166	169	174	175

**Table 6** Yield in bushels/acre of WestBred 470 compared to check varieties in Washington State University yield trials for 1995, 1996 and 1997.

	<u>WestBred</u> <u>470</u>	<u>Stephens</u>	<u>Madsen</u>	<u>Cashup</u>	<u>Rod</u>
<b>1995</b>					
Pullman, WA	63	62	67	71	73
Walla Walla, WA	77	79	75	80	43
Ritzville, WA	60	56	60	53	53
Cunningham, WA	62	73	95	69	55
Dayton, WA	93	73	78	86	101
Mayview, WA	88	77	76	101	95
Lamont, WA	78	88	82	96	110
St. John, WA	94	94	99	103	123
Farmington, WA	92	100	106	101	111
Reardon, WA	109	96	105	123	137
Fairfield, WA	86	94	104	109	113
Creston, WA	113	105	97	101	119
Moses Lake, WA	<u>137</u>	<u>112</u>	<u>112</u>	<u>133</u>	<u>129</u>
mean	89	85	89	94	97

	<u>WestBred</u> <u>470</u>	<u>Stephens</u>	<u>Madsen</u>	<u>Cashup</u>	<u>Rod</u>
<b>1996</b>					
Pullman	122	116	122	123	123
Lamont	101	107	96	94	123
Dusty	100	86	95	84	65
Dayton	148	122	126	130	127
Creston	88	77	84	101	102
Asotin	75	58	70	75	86
Mayview	125	127	110	118	135
Reardon	121	98	108	131	115
St. John	111	96	107	112	103
Fairfield	80	76	91	91	85
Bickleton	70	71	66	63	72
Farmington	129	129	125	135	132
Moses Lake	150	129	137	121	122
Lind	77	72	78	85	80
Ritzville	98	87	94	101	105
Pomeroy	98	86	98	100	98
Walla Walla	158	142	128	142	138
Coulee City	<u>39</u>	<u>36</u>	<u>46</u>	<u>60</u>	<u>63</u>
mean	105	95	99	104	104

**Table 6 continued**

	<u>WestBred</u> <u>470</u>	<u>Stephens</u>	<u>Madsen</u>	<u>Cashup</u>	<u>Rod</u>
<b>1997</b>					
Pullman	103	102	94	102	103
Lind	64	69	56	56	70
Pomeroy	127	119	105	109	126
Walla Walla	127	130	127	116	144
Dayton	127	105	101	109	110
Ritzville	70	68	69	80	89
Lamont	124	121	102	124	123
Dusty	141	125	122	131	126
St. John	149	146	136	150	152
Asotin	56	64	62	66	73
Mayview	127	116	112	131	128
Creston	102	107	114	105	107
Moses Lake	<u>130</u>	<u>124</u>	<u>117</u>	<u>128</u>	<u>124</u>
mean	<u>111</u>	<u>107</u>	<u>101</u>	<u>108</u>	<u>113</u>
Grand mean	102	96	97	102	105

**Table 7** Test weight in pounds per bushel of West Bred 470 compared to check varieties in Washington State University trials for 1995, 1996 and 1997

	<u>WestBred</u> <u>470</u>	<u>Stephens</u>	<u>Madsen</u>	<u>Cashup</u>	<u>Rod</u>
<b>1995</b>					
Pullman, WA	59	57	58	58	57
Walla Walla, WA	61	59	59	57	53
Ritzville, WA	64	61	62	62	60
Cunningham, WA	61	58	60	58	55
Dayton, WA	63	60	60	62	57
Mayview, WA	59	56	57	58	56
Lamont, WA	62	58	59	61	58
St. John, WA	61	59	60	60	58
Farmington, WA	62	59	60	61	58
Reardon, WA	63	57	60	61	58
Fairfield, WA	62	59	61	62	60
Creston, WA	64	61	62	61	59
Moses Lake, WA	<u>63</u>	<u>59</u>	<u>60</u>	<u>58</u>	<u>55</u>
mean	62	59	60	60	57

Table 7 continued

	<u>WestBred</u> <u>470</u>	<u>Stephens</u>	<u>Madsen</u>	<u>Cashup</u>	<u>Rod</u>
<b>1996</b>					
Pullman	62	59	60	60	58
Lamont	63	60	59	61	59
Dusty	60	58	58	59	53
Dayton	64	61	62	63	60
Creston	61	58	57	59	56
Asotin	61	54	58	59	56
Mayview	63	60	61	60	59
Reardon	62	57	59	60	56
St. John	62	58	59	60	57
Fairfield	62	56	59	59	57
Bickleton	63	58	58	59	58
Farmington	63	59	60	60	58
Moses Lake	63	57	59	56	54
Lind	63	60	60	60	59
Ritzville	64	60	61	62	60
Pomeroy	63	60	61	60	59
Walla Walla	63	61	60	61	60
Coulee City	57	53	57	57	54
mean	62	58	59	60	57

	<u>WestBred</u> <u>470</u>	<u>Stephens</u>	<u>Madsen</u>	<u>Cashup</u>	<u>Rod</u>
<b>1997</b>					
Pullman	63	59	60	60	58
Lind	65	61	62	62	62
Pomeroy	64	61	61	62	60
Walla Walla	62	60	60	61	59
Dayton	63	59	61	61	58
Ritzville	64	60	61	63	61
Lamont	63	60	60	60	60
Dusty	63	59	60	61	59
St. John	63	60	61	62	60
Asotin	63	60	60	60	59
Mayview	63	60	61	62	61
Creston	63	60	60	60	58
Moses Lake	<u>61</u>	<u>58</u>	<u>58</u>	<u>61</u>	<u>57</u>
mean	<u>63</u>	<u>60</u>	<u>60</u>	<u>61</u>	<u>59</u>
Grand mean	62	59	60	60	58

## WestBred 470

**Table 8** Protein concentration in percent of WestBred 470 compared to check varieties in Washington State University trials for 1996 and 1997.

	<u>WestBred</u> <u>470</u>	<u>Stephens</u>	<u>Madsen</u>	<u>Cashup</u>	<u>Rod</u>
<b>1996</b>					
Pullman, WA	9.3	8.9	9.0	8.6	7.6
Lamont, WA	8.1	8.0	7.3	8.1	7.2
Dusty, WA	9.9	10.1	10.2	10.1	9.6
Dayton, WA	11.1	11.2	10.8	10.4	10.8
Creston, WA	8.6	8.8	9.4	8.1	8.0
Asotin, WA	9.1	10.1	9.5	8.5	8.5
Mayview, WA	10.3	10.1	10.6	9.4	9.5
Reardon, WA	10.7	10.3	11.5	9.8	10.6
St. John, WA	12.9	11.9	12.2	11.5	11.7
Fairfield, WA	10.7	11.1	10.2	9.8	10.1
Bickleton, WA	6.8	6.9	6.5	6.4	6.1
Farmington, WA	11.0	10.0	10.3	9.9	10.1
Moses Lake, WA	12.1	11.4	11.5	12.1	11.8
Lind, WA	13.2	11.5	11.9	10.2	11.1
Ritzville, WA	10.4	10.1	9.8	9.2	9.0
Pomeroy, WA	10.5	11.0	10.2	10.8	9.6
Walla Walla, WA	12.6	12.0	12.3	11.8	11.7
Coulee City, WA	13.0	12.2	11.3	11.1	12.0
mean	10.6	10.3	10.3	9.8	9.7
	<u>WestBred</u> <u>470</u>	<u>Stephens</u>	<u>Madsen</u>	<u>Cashup</u>	<u>Rod</u>
<b>1997</b>					
Pullman	10.8	9.1	9.7	8.9	8.6
Lind	11.8	10.0	11.0	9.3	9.8
Pomeroy	9.4	8.7	10.0	9.0	8.7
Walla Walla	13.1	11.7	12.1	11.7	11.2
Dayton	11.5	11.0	12.3	10.7	11.5
Ritzville	11.6	11.2	12.1	10.5	9.8
Lamont	9.3	9.2	8.8	8.5	8.3
Dusty	9.3	9.7	10.0	9.1	9.4
St. John	10.9	10.1	11.1	10.5	10.0
Asotin	10.3	10.1	10.1	8.8	9.4
Mayview	10.7	10.1	11.1	9.8	9.5
Creston	9.0	8.6	8.2	7.8	7.9
Moses Lake	<u>14.1</u>	<u>12.8</u>	<u>13.0</u>	<u>12.2</u>	<u>12.7</u>
mean	<u>10.9</u>	<u>10.2</u>	<u>10.7</u>	<u>9.8</u>	<u>9.8</u>
Grand mean	10.7	10.3	10.5	9.8	9.7

**Table 9** End use quality of West Bred 470 compared to check varieties in the 1995 University of Idaho extension trials at Kimberly, Paul and Aberdeen.

Variety	Flour Protein (%)				Flour Yield (%)			
	<u>Kimberly</u>	<u>Paul</u>	<u>Aberdeen</u>	<u>Avg.</u>	<u>Kimberly</u>	<u>Paul</u>	<u>Aberdeen</u>	<u>Avg.</u>
WestBred 470	7.2	8.4	8.7	8.1	68.3	67.9	66.3	67.5
Davis	6.3	7.6	7.7	7.2	70.6	70.2	69.5	70.1
Lambert	5.7	7.3	7.7	6.9	71.4	69.5	75.3	72.1
Madsen	6.6	7.0	7.9	7.2	73.6	73.6	73.6	73.6
Rod	6.7	6.9	7.8	7.1	72.4	71.9	72.1	72.1
Stephens	6.7	7.7	7.5	7.3	70.6	71.9	69.5	70.7

Variety	Break Flour Yield (%)				Cookie Diameter (cm)			
	<u>Kimberly</u>	<u>Paul</u>	<u>Aberdeen</u>	<u>Avg.</u>	<u>Kimberly</u>	<u>Paul</u>	<u>Aberdeen</u>	<u>Avg.</u>
WestBred 470	38.9	34.3	32.9	35.4	8.54	8.63	8.59	8.59
Davis	44.9	38.3	40.3	41.2	8.76	8.41	8.67	8.61
Lambert	41.7	36.3	37.4	38.5	8.49	8.75	8.76	8.67
Madsen	39.2	36.6	36.7	37.5	8.89	9.25	9.10	9.08
Rod	41.1	36.9	37.4	38.5	8.90	9.00	8.89	8.93
Stephens	38.4	36.2	27.6	34.1	9.03	9.19	8.67	8.96

## WestBred 470

Table 10. Test of significance (Student's t on paired plots) comparing the heading dates of WestBred 470 and Stephens in Western Plant Breeders' and University Trials.

(all values are the mean heading date of two replicated plots at each location)

Year	Location	Heading Date (Julian)		difference	diff sq
		WestBred 470	Stephens		
92	Bozeman, MT	163	167	-4	16
93	Bozeman, MT	173	177	-4	16
95	Bozeman, MT	181	187	-6	36
95	Mont. St. Univ. Bozeman, MT	173	173	0	0
	Kalispell, MT	154	157	-3	9
	Moccasin, MT	174	177	-3	9
	Huntley, MT	162	164	-2	4
95	Univ. of ID Kimberley, ID	155	157	-2	4
	Aberdeen, ID	170	171	-1	1
	Paul, ID	165	168	-3	9
96	Bozeman, MT	178	181	-3	9
96	Mont. St. Univ. Bozeman, MT	170	174	-4	16
	Kalispell, MT	166	168	-2	4
96	Univ. of ID Kimberly, ID	153	156	-3	9
	Rupert, ID	162	164	-2	4
	Aberdeen, ID	158	159	-1	1
	Idaho Falls, ID	173	176	-3	9
97	Bozeman, MT	<u>166</u>	<u>169</u>	<u>-3</u>	<u>9</u>
		166.4	169.2		

sum = -49 165

mean = -2.722 9.167

$$sd^2 = \frac{165 - (-49/18)}{18(17)}$$

$$= 0.103303$$

$$sd = 0.321409$$

$$t = \frac{-2.722}{0.321409}$$

$$= -8.469 \text{ with 17 degrees of freedom}$$

$$p < .001$$

## WestBred 470

Table 11. Test of significance (Student's t on paired plots) comparing the Test Weights of WestBred 470 and Stephens in Western Plant Breeders' trials.

(all values are the mean of two replicated plots at each location)

Year	Location	Test Weight in lbs/bu)		difference	diff sq
		WestBred 470	Stephens		
1992	Bozeman, MT	61	59	2	4
	Burley, ID	62	59	3	9
	Moses Lake, WA	58	55	3	9
1993	Bozeman, MT	61	60	1	1
	Blackfoot, ID	63	59	4	16
	Burley, ID	63	60	3	9
	Moses Lake, WA	63	57	6	36
	Step toe, WA	63	61	2	4
1994	Blackfoot, ID	61	56	5	25
	Burley, ID	63	59	4	16
	Moses Lake, WA	65	60	5	25
	Step toe, WA	60	58	2	4
1995	Blackfoot, ID	61	56	5	25
	Burley, ID	63	60	3	9
	Moses Lake, WA	61	59	2	4
	Step toe, WA	61	59	2	4
1996	Blackfoot, ID	63	60	3	9
	Moses Lake, WA	63	60	3	9
	Walla Walla, WA	<u>63</u>	<u>60</u>	<u>3</u>	<u>9</u>
		62.0	58.8		
		sum =		61	227
		mean =		3.2101	11.947
		sd2 =		$\frac{227 - 61^2 / 19}{19(18)}$	
		=		0.09108	
		sd =		0.3018	
		t =		$\frac{3.2101}{0.3018}$	
		=		10.637 with 18 degrees of freedom	
				p<.001	

9700398

**WestBred 470**



U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

**EXHIBIT E**  
**STATEMENT OF THE BASIS OF OWNERSHIP**

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)  Western Plant Breeders, Inc.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME  WestBred 470
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)  8111 Timberline Drive Bozeman, MT 59718	5. TELEPHONE (include area code)  (406) 587-1218	6. FAX (include area code)  (406) 586-8247
	7. PVPO NUMBER  9700398	
8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain.  <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
9. Is the applicant (individual or company) a U.S. national or U.S. based company? If no, give name of country _____  <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
10. Is the applicant the original breeder? If no, please answer the following:  <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO  a. If original rights to variety were owned by individual(s): Is (are) the original breeder(s) a U.S. national(s)? If no, give name of country _____  <input type="checkbox"/> YES <input type="checkbox"/> NO  b. If original rights to variety were owned by a company: Is the original breeder(s) U.S. based company? If no, give name of country _____		
11. Additional explanation on ownership (If needed, use reverse for extra space):		

**PLEASE NOTE:**

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original breeder, both the original breeder and the applicant must meet one of the above criteria.

The original breeder may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

Public reporting burden for this collection of information is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Jamie L. Whitten Building, Washington, D.C. 20250. When replying, refer to OMB No. 0581-0055 and form number in your letter.

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